National Institute of Environmental Health Sciences

Aboriginal hunting buffers climate-driven fire-size variability in Australia's spinifex grasslands

Author(s): Bliege Bird R, Codding BF, Kauhanen PG, Bird DW
Year: 2012
Journal: Proceedings of The National Academy of Sciences of The United States of America. 109 (26): 10287-10292

Abstract:

Across diverse ecosystems, greater climatic variability tends to increase wildfire size, particularly in Australia, where alternating wet-dry cycles increase vegetation growth, only to leave a dry overgrown landscape highly susceptible to fire spread. Aboriginal Australian hunting fires have been hypothesized to buffer such variability, mitigating mortality on small-mammal populations, which have suffered declines and extinctions in the arid zone coincident with Aboriginal depopulation. We test the hypothesis that the relationship between climate and fire size is buffered through the maintenance of an anthropogenic, fine-grained fire regime by comparing the effect of climatic variability on landscapes dominated by Martu Aboriginal hunting fires with those dominated by lightning fires. We show that Aboriginal fires are smaller, more tightly clustered, and remain small even when climate variation causes huge fires in the lightning region. As these effects likely benefit threatened small-mammal species, Aboriginal hunters should be considered trophic facilitators, and policies aimed at reducing the risk of large fires should promote land-management strategies consistent with Aboriginal burning regimes.

Source: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3387077

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Extreme Weather Event, Food/Water Security

Extreme Weather Event: Wildfires

Food/Water Security: Food Access/Distribution

Geographic Feature:

resource focuses on specific type of geography

Desert, Rural

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Australasia

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Population of Concern: A focus of content

Population of Concern: ☑

populations at particular risk or vulnerability to climate change impacts

Racial/Ethnic Subgroup, Workers

Other Racial/Ethnic Subgroup: Martu aboriginal hunters

Resource Type: ☑

format or standard characteristic of resource

Research Article

Resilience: ☑

capacity of an individual, community, or institution to dynamically and effectively respond or adapt to shifting climate impact circumstances while continuing to function

A focus of content

Timescale: ☑

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content